68 (A.N. 1810), and the following are almost decisive of fluctuation through about two magnitudes, so that at times the star will be visible to the naked eye, and at others fairly beyond unassisted vision.

As lower estimates we have Argelander 1842 January 25—8 mag., and Radcliffe Obs. 1870 February 22—7·5 mag.

As higher estimates we find, Flamsteed, 1696 January—5½, Lalande (in Fedorenko's Catalogue), 1790 February—5·6, Dembowski, 1868 February 2—5·5, and Radcliffe Obs., 1872 March 9—6·0.

It does not occur in the *Uranometria*, but is B.A.C. 1924, and there very properly removed from Camelopardus, to which it could only have been originally assigned by a mistake. It belongs to Auriga, though it is hardly, as the Bedford *Cycle* tells us, "in the Waggoner's eye."

THE DOUBLE STAR Σ 2120.—M. Camille Flammarion sends us some remarks on this object, to which allusion was made in NATURE, vol. xi. p. 147. Identifying it with No. 89 of Sir W. Herschel's Class III., M. Flammarion thinks the early observation tends to establish the binary character of the star, notwithstanding the measures from 1829 to 1873 may be represented by rectilinear motion. We shall revert to this subject next week.

THE MINOR PLANETS.—The elements of No. 148 have been calculated by M. Bossert and Herr V. Knorre; the orbit is one of the most inclined to the ecliptic (26°).—No. 136, Austria, was recovered at the Observatory of Berlin on the 6th of the present month. Dike and Camilla, with one or two others, are still adrift.

THE AUGUST METEORS.—As previously stated, the systematic course of observation of the meteors of the August period, organised by the French Scientific Association, has this year been attended with considerable success, the atmospheric conditions on the nights of the 9th, 10th, and 11th having been as favourable as possible at many of the stations. The greatest number was observed during the night between the 10th and 11th, but this number varies much in the different accounts so far published by M. Leverrier. The Lisbon observers would appear to have recorded the greatest number, 1,227 meteors having been noted between 10h. and 15h. 25m., when the sky clouded. A table of more than forty tracks, exactly noted, appears in the Paris "Bulletin International" of Sept. 23, the co-ordinates of the points of commencement and extinction being expressed in right ascension and declination, with the corresponding mean times. At Avignon, on the same night, 858 meteors were recorded between 8h. 35m. and 15h. 40m. At Bordeaux M. Lespiault remarked that four-fifths of the meteors seen were Perseids, generally very small, though in a few cases they had considerable brightness and left trains. At Dijon, on a mean of the three nights' observations, the radiant was fixed approximately in R.A. 37°, and polar distance 45°, and in addition to this point, two secondary radiants were detected, one in R.A. 320°·4, N.P.D. 91°·8, and the other in R.A. 331°·0, and N.P.D. 90°·0. With respect to these it is remarked that although, by the means, these co-ordinates appeared to be confused together, yet for each night the points of radiation were very distinct, the meteors of the first group appearing to be directed towards the second radiant, and those of the second group towards the first. At Rouen, 500 meteor-tracks were entered upon the charts, the invariable direction being from Perseus. At the Observatory of Palermo, Prof. Tacchini and M. Delisa made numerous determinations of the position of the radiant from August 9-12 inclusive, the mean of the whole being in R.A. 2h. 50m.9, N.P.D. 36° 51′, but when the points are laid down on a chart it is seen that they are comprised in a very narrow ellipse, a circumstance to which Prof. Tacchini has already drawn attention.

M. Wolf, in reporting the results of this year's observations, considers that the phenomenon advances rapidly towards a very brilliant maximum; the next year will enable us to judge if this maximum has been attained, and it may then be possible, he thinks, to determine the period of revolution of a swarm of meteors, which, though now extended far along the orbit, still presents a very marked region of condensation. On the contrary, M. Wolf observes, the November shower has so nearly ceased, passing now almost unperceived, that it may be unnecessary to call upon observers, who have previously co-operated in this class of observations, to expose themselves again to the possible severity of the nights at that season.

THE CLINICAL LABORATORIES ANNEXED TO THE PARIS HOSPITALS

THE first and typical clinical laboratory was created at the Hôtel-Dieu, by private exertions, a very few months after the time when blood had been running so freely on the pavement of the great city. It was organised at the expense of two doctors, who had shared the disappointments and dangers of those troubled times.

Dr. Liouville, a nephew of the celebrated academician who edited for so many years the *Annals of Mathematics*, having learned by his travels, before the Franco-German war, that Prussia and other German powers had established special laboratories at Berlin and other large cities for promoting physiological researches in the Universities, resolved to introduce establishments of that description in his native land, but under a different system. He laid his ideas before Dr. Behier, one of the most popular professors of the Faculty who adhered to the scheme, and lent all his influence and patronage to bring physical and chemical instruments to the very bedside of the patients at the hospitals.

The intention of these two distinguished physicians was not only to open an institution where physiological science might be promoted as it is at Berlin and Vienna, but to place under the hands of practitioners ready means for enlarging the degree of accuracy of their diagnoses. At a moment's notice an able microscopist armed with a powerful instrument is to answer any question put for ascertaining the composition of humours, the nature of abnormal secretions, &c. A competent chemist, well acquainted with the properties of reagents, is ready to make an analysis of blood, of virus, of medicaments, of urine, of *excreta*, suspected poisonous matters, &c. The use of the spectroscope was not so general at the time as to call for the service of a spectroscopist, but the utility of the speciality even then was made apparent to MM. Behier and Liouville.

These operations can be done daily for the instruction of the students following the daily practice of the hospital.

When the patient dies, his autopsy being carefully made, it can be shown whether the diagnosis was true, or whether the fatal result was due to some uncontrollable circumstance. The unhappy inmate whom science and humanity were powerless to save, is turned into an object of instruction, so that human knowledge may be enlarged and other sufferers cured under similar circumstances. The laboratory was also open from the time of its infancy to foreign men of science or to practitioners wishing to investigate any points connected with their patient.

To the Hôtel-Dieu Laboratory was annexed a "chenil," where a number of rabbits and the like are constantly bred and kept in an excellent state of health. These animals are destined to be employed in testing the efficacy of new medicines to be tried, if proved innocuous, on the patients. In cases of poisoning, the localisation of toxic substances is ascertained, as well as the symptoms of death, and in some cases antidotes are administered for testing their restorative power. They may be considered as living instruments for exploring and extending scientifically the scope of *Pharmacology*.

The results obtained by the two learned associates were so rapid and so unquestionable, that in 1872 their laboratory at the Hôtel-Dieu was declared to be an establishment of public utility.

A few weeks afterwards the Commissioner of the Budget of the National Assembly having paid a visit to the Hôtel-Dieu, inserted in his report a clause asking support for the then existing establishment, at the expense of the Government, and the extension of the system to other Paris hospitals. A sum of 32,000 francs was voted without opposition, and three laboratories were opened, one at La Pitié, the second at the Charité, and the third at the Clinical Hospital. The reports of the *Commission de Budget* were succesively presented by M. Beulé, the ex-Minister of the Interior, and, after he had met his untimely death, by the present sub-Minister of Justice, M. Bardoux, who both of them asked for *frais de premier établissement*. A sum of 90,000 francs was voted, partly by the Versailles National Assembly and partly by the Municipal Council of Paris.

Dr. Liouville was appointed the chief of the Hôtel-Dieu Laboratory; Dr. Carnhill, an anatomist universally known by his researches on the diseases of the liver, was appointed the chief of the *La Charité* Laboratory.

In one of the first sittings of the last session the Municipal Council decided that a large pavilion on the northern part of the New Hôtel-Dieu, now building, should be reserved for the clinical laboratory. No money is to be spared in order to procure the most important instruments which can be designed for chemical or medico-physical observations, either in the way of galvanic batteries, microscopes, spectroscopes, &c. A clinical laboratory will also be established in the new hospital to be inaugurated at the end of next November, which will be one of the most extensive in Paris.

NOTE ON HÆMATITE INDIAN AXES FROM WEST VIRGINIA, U.S.A.

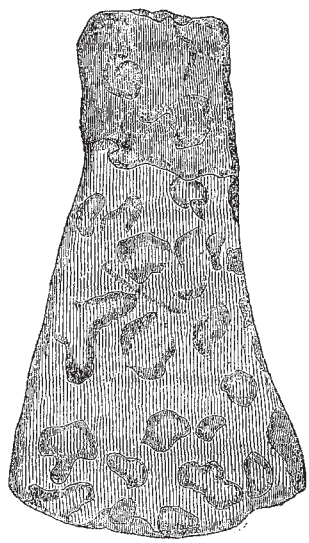
THROUGH the kindness of Horace Fisk, of Trenton, and Major Jed. Hotchkiss, of Staunton, Va., I have been able to procure two specimens of hæmatite iron ore hatchets, of aboriginal manufacture. They possess great interest from the fact of being very similar to native copper axes, characteristic of the "finds" of relics of "mound builders." The specimens, one of which is here figured, have unquestionably been hammered out cold, and shaped from a fragment of the ore, without the aid of fire in previously refining the mass. The specimen figured measures five inches and a quarter in length, by three inches in breadth at the cutting end. The opposite end is square, nearly two inches in width, and somewhat thinner than the broader portion of the implement, which is nowhere of greater thickness than one-fourth of an inch.

The entire surface still shows the hammer marks made in shaping the hatchet, even to the edge, which now shows no trace of grinding or polish; but this may have been obliterated by the rust; but I am inclined to believe from close inspection of both specimens, that the edge originally was a hammered one, and not a ground one; making the specimen more nearly allied to the "clipped" jasper hatchets than polished (ground) porphyry axes.

The accompanying specimen is four-and-a-half inches in length, by two in breadth, is nearly uniform in thickness about three-sixteenths of an inch, and has a well-defined edge, which from its slightly wavy outline, and slight variation in width, I believe to be a hammered, and not a ground or polished edge.

Two other specimens, similar to these, were found with them, and are now in the calimat of Major Hotchkiss, who informs me that the series of four were found under an uprooted tree, on an Indian trail, at the Forks of Kelley's and Rich Creek, Gauley Mt., Tayette Co., West Va.

It has been suggested that the use of hæmatite for paint among our Indians may have led to its employment for other purposes ("Flint Chips," by E. T. Stevens, p. 553), and this is no doubt true, inasmuch as small irregular fragments of this mineral were often utilised, if the shape would at all permit, as arrow heads. Among the thousands of arrow-heads gathered in New Jersey, I have not met with one of iron ore that has been worked into any of the various patterns of flint points; but from graves, associated with others, I have found fragments of the ore, and once, of native copper, of such shape and size, and so placed, that they were evidently arrow-heads.



A curious form of "relic," known here as a "plummet," occasionally occurs, made of iron-ore. One such is figured in the "American Naturalist," vol. vi., p. 643, Fig. 132. This specimen "is made of iron ore, ground down and polished until it is almost as smooth as glass." As such plummets are found in the western mounds, as well as on the surface of the ground throughout the Atlantic coast States, and are always polished, it seems fair to presume that a cutting instrument of such hard material would undoubtedly be polished and ground, if, at the time of its manufacture, grinding was known or practised among the aborigines in fashioning their various weapons and instruments.

When we consider that these iron hatchets were found in a locality once thickly populated by Indians, and probably frequently visited, if not occupied, by the mound-builders, and now yield, on search, an abundance of ordinary stone implements of every grade of workmanship and variety of pattern, it seems at least probable that the specimens in question were not fashioned at a time when the polishing and grinding of weapons was customary, but earlier, as the labour of beating so hard a material into its present shape would doubtless be supplemented by polishing, if the additional value given to an implement by the operation had been recognised.

As the writer has already endeavoured to show, through an extensive series of New Jersey specimens (NATURE, vol. xi., p. 215), that the ruder chipped implements of "our native rocks" are older than the more elaborate jasper and porphyry specimens, so I consider these hammered iron hatchets to be of an earlier age than either the polished iron plummets of the mound-builders, or ground axes of the Indians.

CHARLES C. ABBOTT

Trenton, New Jersey, U.S.A.